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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/989,820	11/20/2001	Daniel A. Jochym	TN247	1589

7590 07/01/2002

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EXAMINER

NORRIS, JEREMY C

ART UNIT	PAPER NUMBER
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2827

DATE MAILED: 07/01/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/989,820	JOCHYM ET AL.
Examiner	Art Unit	
Jeremy Norris	2827	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 11 February 2002.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-15 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-15 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

- Certified copies of the priority documents have been received.
- Certified copies of the priority documents have been received in Application No. _____.
- Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) Notice of References Cited (PTO-892) 4) Interview Summary (PTO-413) Paper No(s). _____ .

2) Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) Notice of Informal Patent Application (PTO-152)

3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. 6) Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4-7, 9-12, 14 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by US 3,660,726, granted Ammon et al. (hereafter Ammon).

Regarding claims 1, 2, 4-7, 9, and 10, Ammon discloses, referring to figure 4, a printed circuit board comprising: at least three layers of material, such that two of the layers (33, 34) of material are electrically conductive and the third layer (31) is an electrical insulator and wherein the insulating layer is disposed between the conductive layers; and at least one conductive stake (25) inserted into the printed circuit board for forming a via for electrically connecting foils from the two conductive layers together [claims 1, 6] wherein the conductive stake has a polygonal shape and is inserted such that at least one point of the polygonal shape makes contact with the foils for forming the via [claims 2, 7], wherein the conductive stake is substantially disposed within the printed circuit board [claims 4, 9], wherein a portion of the conductive stake extends beyond a surface of the printed circuit board [claims 5, 10].

Regarding claims 11, 12, 14, and 15, Ammon discloses, referring to figure 3, a printed circuit board comprising: at least four conductive layers of material; and at least two conductive stakes (25, see figure 2) inserted into a through hole of the printed

circuit board for forming at least two different vias, one via electrically connecting together foils from two of the four conductive layers and the other via electrically connecting together foils from the remaining two of the four conductive layers [claim 11], wherein at least one conductive stake has a polygonal shape, and is inserted such that at least one point of the polygonal shape makes contact with foils from two of the four conductive layers [claim 12], wherein at least one of the conductive stakes is substantially disposed within the printed circuit board [claim 14], wherein a portion of at least one of the conductive stakes extends beyond a surface of the printed circuit board [claim 15].

Claims 1, 3, 6 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by US 3,524,960, granted to Lohff (hereafter Lohff).

Lohff discloses, referring to figure 3, a printed circuit board comprising: at least three layers of material, such that two of the layers (126, 122) of material are electrically conductive and the third layer (116) is an electrical insulator and wherein the insulating layer is disposed between the conductive layers; and at least one conductive stake (92) inserted into the printed circuit board for forming a via for electrically connecting foils from the two conductive layers together [claims 1, 6], wherein the conductive stake has conductive fins (108, 106) attached along a length of the conductive stake, and is inserted such that at least one conductive fin makes contact with the foils for forming the via [claims 3, 8].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ammon in view of Lohff.

Ammon discloses the claimed invention as described above with respect to claim 11, except Ammon does not specifically state that at least one conductive stake has conductive fins attached along a length of the conductive stake, and is inserted such that at least one conductive fin makes contact with foils from two of the four conductive layers. However, Lohff teaches a conductive stake (92) having conductive fins (108, 110) attached along a length of the conductive stake, and is inserted such that at least one conductive fin makes contact with foils from two conductive layers. Therefore, it

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would have been obvious, to one having ordinary skill in the art, at the time of invention, to modify the conductive stakes in the invention of Ammon to have spiraled fins as taught by Lohff. The motivation for doing so would have been to allow the stake to selectively connect or disconnect the interior conductive layers without disconnecting the surface circuits, thus making the device more versatile (see Lohff col. 2, lines 55-60)

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following documents disclose conductive pre-forms inserted into circuit boards to electrically connect layers of the circuit board:

US 2,752,580	Shewmaker,
US 5,290,970	Currie,
US 5,656,798	Kubo et al.,
US 6,255,601	Burkhart,
US 6,333,471	Nojoka.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy Norris whose telephone number is 703-306-5737. The examiner can normally be reached on Mon.-Th., 9AM - 6:30 PM and alt. Fri. 9AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on 703-305-9883. The fax phone numbers

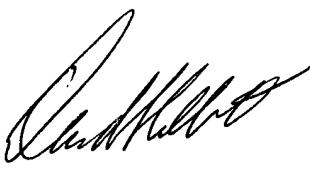
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for the organization where this application or proceeding is assigned are 703-305-7724
for regular communications and 703-305-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or
proceeding should be directed to the receptionist whose telephone number is 703-308-
0956.

JCSN
June 26, 2002



DAVID L. TALBOTT
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800